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Childhood Burns in Hospitalised Patients in Ilesa: A Review of 70 Cases

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SUMMARY

JoinerKT, OyedejiGA and Olamijulo SK. Childhood Burns in Hospitalised Patients in Ilesa: A Review of 70 Cases. *Nigerian Journal of Paediatrics* **1987; 14:0.** An analysis of 70 cases of burns admitted into the Paediatrics Department, Wesley Guild Hospital Ilesa, is presented. Burns were commoner in males than females. The highest incidence of 68% was in the 1–5 year age group. Scalds accounted for 67.1% of all burns and most injuries (94.3%) took place within the home environment The problem of burns is an exercise in social medicine and epidemiological studies are essential to aid the development of effective counter-measures

Introduction

THE leading causes of childhood mortality and morbidity in developing countries remain infections, infestations and malnutrition, hence it is logical for the developing countries to concentrate on measures to reduce the very high mortality due to these disorders[1]. Consequently, information on apparently less common conditions such as accidents and burns is scarce. Yet, burns often result in severe deformity, disability and even long term adverse psychological reactions in affected children and their parents.[2] This retrospective study was thus undertaken to gather information on the pattern of childhood burns and its morbidity amongst hospitalized patients in a semi-urban community of Nigeria.

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Materials and Methods

The 28-bed isolation children's ward of the Wesley Guild Hospital, Ilesa, is the only specialised unit for the care of children in a semi-urban area of Nigeria with an estimated population of 500,000 Admission of patients is usually from a large under-fives Clinic, the casualty department or through referrals from other Clinics and Health Centres. Data obtained from the records of children admitted for burns into the Unit between January 1977 and December 1982, were analysed with respect to age at presentation, sex, type of burns and where they occurred, form of activity of the child at the time of injury, area and percentage of body surface

involved, time of the day that the injury took place, and how soon after the accident the child presented in hospital, domestic first-aid measures undertaken, duration of stay in hospital and outcome.

Results

The total number of children admitted into the hospital during the period under review was 16,223 of which 70 (0.43%) were cases of burns.

Age and Sex Incidence

Of the 70 children, 48 (68.6%) were under 5 years of age (Table 1). The male: female ratio was 1.6:1. This male preponderance was found in all the age groups, except in infancy, when burns occurred more commonly in females than in males

TABLE I

Age and Sex Incidence in 70 Cases of Burns

	Age Groups (Yrs)				
	<1	1–4	5–9	10–14	*Total*
Males	1	26	8	8	43
Females	2	19	3	3	27
Total	3(4)	45(64)	11(16)	11(16)	70(100)

Time of Injury

Twenty-eight (40%) children sustained their burns between the hours of 10 a.m and 1 p.m. (Table II), 21 (30%) between 2 p.m. and 5 p.m. 12 (17.2%) between the hours of 6 p.m. and 9 p.m. and 8 (11.4%) children sustained their burns between 6 a.m. and 9 a.m. It will be seen that younger children were more likely to sustain burns in the early hours of the day, whilst the older children were more likely to have their injuries later in the day.

Type of Burns and where they occurred

As shown in Table III, 47(61.1%) of the burns were due to hot liquid or food (water, oil, hot soups, etc.); 14(20%) due to open flame and 9(12.9%) to kerosene (clothing involved in 5). No electrical or chemical burns occurred. Scalds tended to occur in the younger age groups whilst open flame burns occurred more frequently in the older children.

In 41 (586.%) cases, the burns took place outside the house and in 29(41.4%) within the house. Sixty-six (94.3%)of all the cases occurred within the home environment (within the compound), 4 (5·7%) occurred in older children playing with flammable substances in the bush or whilst helping in the dressing of goats during a celebration.

TABLE II

Time of Occurrence of Burns in 70 Cases

Age (Yrs)	*Time of Occurrence*					
	6am-9am	10am-1pm	2pm-5pm	6pm-9pm	10pm-1am	2am-5am
<1	–	–	3	–	–	–
1–4	7	20	13	5	–	–
5–9	1	6	3	1	–	–
10–14	–	2	2	6	1	–
Total	8(11.4)	28(40.0)	21(30.0)	12(17.2)	1(1.4)	–

Numbers in parenthesis represent percentages

Activity

Fifty-one (72.9%) of the 70 cases occurred whilst the children were playing around the kitchen area of the home In 6(8.6%) cases, the children (usually the older age group) were helping with the preparation of the family meal. In 3 cases (4.3%), the burns were sustained when parents applied hot coal or fire-wood to the soles of the feet and buttocks of convulsing children in attempts to control the seizures.

Area and percentage of body surface involved

The trunk and limbs were involved in 57 (81.4%) of the cases and the head and neck in 20 (28,5%). Twenty-five patients (35.7%) had less than 10% body surface involved (the face and neck in most cases), whilst 27 (38.6%) had 10-20% hurns, 11 (15,7%) had 20-30% and 7 (10%) had more than 30%. Fifty seven cases (81.4%) were first degree burns, 9 (12.9%) second degree and 4 (5.7%) third degree burns.

Interval between accident and hospital treatment

Fifty-one (72.9%) children were brought to the hospital within 24 hours of sustaining the injury, whilst 12 (17.1%) came between 24 and 48 hours, and 7 (10%) after 4 days or more.

Domestic first aid

Forty-seven (67.1%) children had no domestic first aid treatment. In 23 (32.9%) children who had first aid, the measures taken ranged from pouring cold water or cold palm oil on the burned area, to applying plant leaves, corn flour, gantian violet, raw egg yolk and traditional medication to the burnt area.

Outcome

Sixty one (87.1%) of the cases were discharged home vithout any disability or disfigurement; 9 (12.9%) went home with complications - 6 had contractures, 2 had severe scarring and 1 had marked hypopigmentation with scarring sufficiently disfiguring to the child to make her ask if she can apply gentian violet to the area until the area becomes pigmented again.

The burns were severely infected in 9 (12.9%) cases - 6 males and 3 females. Four of them were aged 14 months - 4 years and five, 10-14 years. Three of the infected burns were scald, 4 kerosene, and 2 flame burns. Three of them were brought to the hospital between 24 and 48 hours and six within 24 hours of sustaining the injury. Two of the children had 10-20%, four had 20-30% and the remaining 3 had 35-40% body surface area involved. Thus, 7 of the 9 infected cases had more than 20% body surface area involved and 2 less than 20% involved. However, there was a total of 18 burns exceeding 20% body surface area and 52 burns of less than 20% body surface area in the population of 70 children. The proportion of children with burns exceeding 20% body area who were infected (7 out of 18) was significantly greater than the proportion with less than 20% burnt body area who were infected (2 out of 52). ($X_1 = 14.65$; $p < 0.005$).

The burns were first degree in 8 of the 9 infected cases and second degree in the remaining one. The area of the infected burns involved predominantly the buttock, groin and perineal area in 2 cases, the axilla in one case, the face and neck in 3 cases and the trunk and/or limbs as well in 8 cases. The organism cultured were *Staphylococcus albus* in 2 cases, *Staphylococcus pyogenes* in 1, *Psuedomonas aerugimosa* in 5 and Proteus species in one case.

Duration of stay in hospital

Fifty-eight (82.9%) children spent less than one month in hospital (Table IV) Only 1 (1.4%) child spent more than 4 months in hospital. The average duration of stay in hospital was 25 days for the 70 patients and 47.1 days for the 9 whose burns were infected.

TABLE III

Types of Burns in 70 Cases

Type	*No of Cases*	*% of Total*
Scald	47	67.1
Flame	14	20.0
Kerosene	9	12.9
Total	70	100.0

TABLE IV

Duration of Stay in Hospital in 70 Cases of Burns

Age (Yrs)	*Duration (Months)*					
	<1	1	2	3	4	>4
<1	23	–	–	–	–	–
1–4	19	5	–	–	–	–
5–9	7	2	1	1	-	1
10-14	9		1		1	
Total	58(82.9)	7(10)	2(2.9)	1(1.4)	1(1.4)	1(1.4)

Figures in parenthesis represent percentages.

Discussion

Burns constitute a relatively common-place type of injury involving children[2]. It was the fifth commonest injury seen in the children's emergency room of the Lagos University Teaching Hospital[3] but the fourth in Ibadan, Igboora and Calabar studies[4-5]. However, higher percentages of accidents in children due to burns have been reported from India[6] and Tanzania[7]. As in most developing countries, the overall incidence in all age groups in Nigeria is unknown. A large proportion of the injuries is sustained within the home environment as shown in this study. Daramola[8] in Lagos, has reported that in 71% of his cases, the burns were sustained within the home environment. Most of the cooking is done outdoors usually at the backyad of the homes and at ground level, hence it is not surprising that most injuries took place outside the house whilst the child was playing in and around the cooking area.

As has been reported elsewhere,[1-10] the younger age groups were more prone to injury in the present study. Burns is a great health problem of the pre-school child especially the toddlers, in whom a high degree of mobility is acquired with little or no comparable judgement. Their enquiring minds cause them to be adventurous and not infrequently to sustain burns. Scalds were the commonest injury in this study, accounting for 67.1% of cases. This coincides

with the usual pattern in other studies[1-9]. The pattern of male predominance is seen in this study unlike that reported by Sinette[1] in Ibadan, in which females outnumbered males in older age group.

One of the complications seen in this study was wound infection and this involved mainly the burns exceeding 20% body surface area. The implication is that the greater the area of skin damaged by burns, the greater the chances of infection occurring. The part of the body involved is also important in determining the likelihood of infection. Burns located around the buttocks, perineum and axilla would be difficult to keep clean especially in young children. As has been shown in this study, infection prolongs the duration of hospital stay in the patients. However, contray to the finding in this study, one would have expected a higher incidence of infected burns in children brought into the hospital after four days following the occurrence of the injury than in children brought earlier, As it is, the impression in this study is that most of the infections in these children are nosocomial. It is possible that some of the infections brought from outside the hospital were missed since the children were not vigorously investigated for infections until they were suspected clinically to be infected.

Childhood burns is preventable, but unfortunately, it is likely that its incidence will increase as our society becomes more industrialised, and more sophisticated methods are used for cooking, heating and lighting[10]. Rural electrification will probably add to its toll, although at present, electrical burns are rare. Unless significant preventive steps are taken, this form of accident will be seen with increasing frequency as gastroenteritis, broncho-pneumonia and malaria are brought under control[3]. Therefore, as preventive measures, we recommend that:

(*a*) The fireplace be raised up to about one metre high, so that children cannot reach it, play around it or accidentally fall into a fire[11]. Kitchens should be designed, giving consideration not only to the convenience of the housewives, but also the safety of the children.

(*b*) Adults or older responsible children should be around cooking areas when the meals are being prepared, to prevent the young child from falling into the fire.

(*c*) The prevention of childhood accidents should be included in health education programmes.

The real solution to the problem of burns is neither a new drug nor an intricate surgical but rather an exercise in social medicine[8]. Epidemiological data gathering as in this survey, is essential to and the development of effective countermeasures.

References

1. Sinette CH. The pattern of childhood accidents in South-Western Nigeria. *Bull Wld Elth Org* 1969; **41:** 905 15.
2. Miller RWS. Burns and Scalds in children. Postgraduate Doctor 1980; **2:** 214–22.
3. Ransome Kuti O. The problems of paediatric emergencies in Nigeria. *Nig Med J* 1972; **2:** 62–70.
4. Onadeko MO. Domestic accidents among rural and urban children in Nigeria. *Nig J Paed* 1983; **10:** 23–27.
5. Asindi AA, Efem SEE, Onuba O and Asuquo ME. Accidental trauma in children *Nig J Paed* 1986; **13:** 77–81.
6. Mittal BN' Indrayan A, Sengupta RK and Bagohi SG. Epidemiological triad in domestic accidents. *Indian J Med Res* 1975; **63:** 1344–52.
7. Kimati VP. Childhood accidents in Dar es Salaam. *Trop Geogr Med* 1976; **20:** 91–4.
8. Daramola T. Epidemiology of burns in Lagos. *W Afr Med J* 1967; **16:** 222–6.
9. Ide-Smith E. The epidemiology of burns—the cause and control of burns in children. *Pediatrics* 1969; **44:** 821-7
10. Oluwasanmi JO Burns In: Plastic Surgery in the Tropics: An Introduction for Medical Students and Surgeons. Oluwasanmi JO, ed. London *Macmillan Press (Publishers)*, 1979; 44-74
11. Balidin B, Hart R, Huengers R and Verslugs Z Burns and Poisoning In: Child Health: Manual for Medical Assistants and other Rural Health Workers Balidin B, Hart R, Huengers R and Verslugs Z, eds Oxford: African Medical and Research Foundation 1975; 221–2

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